Patent claims

1. A method for producing flavor-active terpenes from terpene hydrocarbons by means of a selective biotransformation and using microorganisms of the ascomycetes, basidiomycetes and deuteromycetes classes, wherein a lyophilized mycel is used which is firstly rehydrated and then mixed with the substrate.

2. The method as claimed in Claim 1, wherein the mycel cells are additionally permeated by ultrasonic treatment and/or extrusion.

3. The method as claimed in either Claim 1 or Claim 2, wherein the biotransformation is carried out in a submerged culture.

4. The method as claimed in any one of Claims 1 to 3, wherein the biotransformation is carried out in an enantioselective, a stereoselective and/or a regioselective manner.

5. The method as claimed in any one of Claims 1 to 4, wherein representatives of Fusarium, Pleurotus, Penicillium and Chaetomium are used as the microorganisms.

6. The method as claimed in any one of Claims 1 to 5, wherein Fusarium proliferatus, Pleurotus sapidus, Penicillium citrinum and Chaetomium globosum are used as the microorganisms.

7. The method as claimed in any one of Claims 1 to 6, wherein mono- and sesquiterpenes are used as the terpene hydrocarbons.

8. The method as claimed in any one of Claims 1 to 7, wherein limonene, pinene, valencene, farnesene, thymol and dimethyl allyl alcohol are used as the terpene hydrocarbons.

9. The method as claimed in any one of Claims 1 to 8, wherein R-(+) limonene or S-(-) limonene are used as the terpene hydrocarbons.

10. The method as claimed in any one of Claims 1 to 9, wherein before the biotransformation an enzyme induction is carried out in the lyophilized mycel by addition of substrate.

11. The method as claimed in any one of Claims 1 to 10, wherein the biotransformation is carried out in a two-phase system.

12. The method as claimed in Claim 11, wherein the biotransformation is carried out in a two-phase system without co-solvents.

13. The method as claimed in any one of Claims 1 to 12, wherein the biotransformation is carried out in a medium with a reduced quantity M of carbon source.

14. The method as claimed in Claim 13, wherein the reduced quantity M of carbon source M is $< 50\ gL^{-1}$.

15. The method as claimed in any one of Claims 1 to 14, wherein the reaction is carried out in a stirred tank, surface or fixed bed reactor.

16. The method as claimed in any one of Claims 1 to 15, wherein terpenoid alcohols, epoxides, aldehydes, ketones, multiple alcohols, carbonyls and carbonyl alcohols are obtained as the flavor-active terpenes.

17. The method as claimed in any one of Claims 1 to 16, wherein piperitone, isopiperitone, isopiperitenol, isopiperitenone, perillaaldehyde, carvone, carveol, linalool, linalool oxide, terpineol and nootkatol and nootkatone are obtained.

18. The method as claimed in any one of Claims 1 to 17, wherein the transformation products are isolated from cellular compartments or fractions.

19. The method as claimed in any one of Claims 1 to 18, wherein firstly R-(+)-limonene is biotransformed in an enantioselective manner to cis-(+)-carveol and S-(-)-

limonene is biotransformed in an enantioselective manner to trans-(-)-carveol and subsequently trans-(-)-carveol to R-(-)-carvone.

20. The method as claimed in Claim 19, wherein the enantioselective biotransformation of R-(+)-limonene to cis-(+)-carveol is carried out with Fusarium spec. as the biocatalyst.

21. The method as claimed in Claim 19, wherein the enantioselective transformation of trans-(-)-carveol to R-(-)-carvon is carried out with Pleurotus spec. as the biocatalyst.

22. The method as claimed in any one of Claims 1 to 21, wherein bicyclic sesquiterpenes are transformed to β-nootkatol and subsequently to nootkatone.

23. The method as claimed in Claim 22, wherein the transformation of bicyclic sesquiterpenes to β-nootkatol and subsequently to nootkatone is carried out with Chaetomium spec.